

## **SUBMERSIBLE DIVES ON THE EQUATORIAL ATLANTIC EARTH'S MANTLE: THE ST. PAUL TRANSFORM FAULT REGION**

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St. Paul F.Z. (SPFZ) is a multiple transform fault system interrupted by several Intra-Transform Ridge (ITR) spreading centers. Two regions were studied (filmed and sampled) by submersible NAUTILE: 1) ITR (0°37'N-25°27'W), consist of short (10km long and 2km wide) segment, 2) St. Peter and St. Paul's Rocks (SPPR) massif (3700m depth). The ITR, a rift valley with recent volcanic activities (N and T-MORBs) erupted at depths of 4700 m. Geological profile along the rift's wall show several lava units crossed by dikes. Harzburgites containing sporadic intrusions of gabbros occur between 4000m. and 2900m. An older volcanic terrain (160m thick and 2750m. depth) of the rift has similar composition of the rift valley. The geological setting and high ultramafic/volcanic ratio suggests low magmatic supply and crustal-mantle uplift. The SPPR massif consists of a sigmoidal ridge divided by an E-W trending fault into two domains: A) N Ridge - strongly tectonized fault scarps composed of foliated mylonitized peridotite with sporadic gabbroic intrusions at depths of 3900 - 2500m. Several thin outcrops of basalt's were observed (2700 -1700m). B) S Ridge - undeformed spinel lherzolite (2000 - 1400m). The active E-W fault witch divide the two ridges, consists of basalt and dolerites. An extensional motion affected the S Ridge, while the N Ridge was formed during sheering and uplift of upper mantle material at high temperatures. The SPPR massif was a small ridge segment discontinuity, which spreading was interrupted during the mantle uplift and was shearing in an intra-transform domain.